

timing, radio stations, maximum temperature set point or any other desired output to the user and are selected from the group consisting of LED's or LCD's.

10. A modular control device according to claim 1 wherein said control electronics receive a desired temperature set point from said user interface and a temperature variable from said temperature sensor and produce variable excitation current control signals to both the hot inlet solenoid valve and the cold inlet solenoid valve.
11. Control electronics according to claim 10 wherein said excitation current signals are produced by either a microprocessor or an arrangement of electronic components.
12. Excitation current signals according to claim 11 are produced by one or more methods from the group consisting of Pulse Width Modulated output signals or current limiting electronics.
13. A modular control device according to claim 1 wherein said power source is selected from the group consisting of Alternating Current (AC), Alternating Current (AC) to Direct Current (DC) transformation, or Direct Current (DC) from a battery source.

## **Abstract**

An electro-mechanical control system that quickly and accurately controls the flow of two primary fluids such that the mixed secondary fluid would be delivered to an end user, such as a shower or bath or the like, at a constant temperature. The invention allows the user to select the temperature of the secondary fluid via a digital control interface. A temperature-sensing element located in the secondary fluid provides a feedback signal to the control

electronics. Upon flow of the secondary fluid, the control electronics determine the required flow for each of the two primary valve members and control said flow from each primary valve member via an electronic signal. The output signals control two high flow proportional solenoid valves such that the primary fluid flow is electronically adjusted through a plurality of positions from full on to full off. This constant control algorithm provides quick, accurate, and stable secondary fluid temperature. The present invention allows for user adjustment of the temperature ranging from the cold inlet temperature to the hot inlet temperature, stored temperature settings, scald protection, various flow rates, various flow localities, timing, radio, or other digital features.